

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) A method for real time transmission of frame-based content between a network server and a network client comprising the steps of:

~~classifying~~designating individual packets of said content as either a frame packet that contains information for reconstructing an entire frame of said content or a differential packet that contains changes to a frame;

assigning to each of said packets a sequence number and a timer for retransmission retention, wherein the duration of the timers for frame packets is longer than for differential packets;

transmitting each of said packets to said network client;

detecting an acknowledgment for one or more packets received at said network client;

retransmitting any of said packets for which no acknowledgment is detected if their respective timers have not expired; and

terminating the retention of each packet whose timer has expired, wherein differential packets are removed more frequently than frame packets in order to ensure that critical information is not lost when an acknowledgment is not detected.

2. (Canceled)

3. (Previously Presented) A method as set forth in Claim 1 further comprising terminating the retention of any of said packets upon detecting said acknowledgment for said any of said packets prior to expiration of said timer.

4. (Original) A method as set forth in Claim 1 further comprising placing said acknowledgment for differing ones of said packets into a coalesced acknowledgment.

5. (Previously Presented) A method as set forth in Claim 1 further comprising:

maintaining the bandwidth of successively transmitted packets to the lesser of a congestion window initially determined to be maximum segment size and a client window size no greater than the size of a UDP socket input buffer at said client.

6. (Original) A method as set forth in Claim 5 wherein said congestion window is increased by the size of each packet for which an acknowledgment is received.

7. (Original) A method as set forth in Claim 6 wherein said congestion window is increased until said congestion window exceeds a predetermined threshold, and increases thereafter by said maximum segment size for each acknowledgment received.

8. (Original) A method as set forth in Claim 7 wherein said threshold is determined by a window size that is last known to be error free in receipt of said successively transmitted packets.

9. (Original) A method as set forth in Claim 7 wherein said threshold is, upon retransmitting of any of said packets, set to the greater of $\frac{1}{2}$ of the current congestion window size or maximum segment size.

10. (Original) A method as set forth in Claim 9 wherein said congestion window is reset to said maximum segment size.

11-20. (Canceled)

21. (Currently Amended) A network for real time transmission of frame-based content between a network server and a network client comprising the steps of:

means for ~~classifying~~ designating individual packets of said content as either a frame packet that contains information for reconstructing an entire frame of said content or a differential packet that contains changes to a frame;

means for assigning to each of said packets a sequence number and a timer for retransmission retention, wherein the duration of the timers for frame packets is longer than for differential packets;

~~means for~~

means for transmitting each of said packets to said network client;

means for detecting an acknowledgment for one or more packets received at said network client;

means for retransmitting any of said packets for which no acknowledgment is detected if their respective timers have not expired; and

means for terminating the retention of each packet whose timer has expired, wherein differential packets are removed more frequently than frame packets in

order to ensure that critical information is not lost when an acknowledgment is not detected.

22. (Canceled)

23. (Previously Presented) A network as set forth in Claim 21 further comprising means for terminating the retention of any of said packets upon detecting said acknowledgment for said any of said packets prior to expiration of said timer.

24. (Original) A network as set forth in Claim 21 further comprising means for placing said acknowledgment for differing ones of said packets into a coalesced acknowledgment.

25. (Previously Presented) A network as set forth in Claim 21 further comprising:

means for maintaining the bandwidth of successively transmitted packets to the lesser of a congestion window initially determined to be maximum segment size and a client window size no greater than the size of a UDP socket input buffer at said client.

26. (Original) A network as set forth in Claim 25 wherein said congestion window is increased by the size of each packet for which an acknowledgment is received.

27. (Original) A network as set forth in Claim 26 wherein said congestion window is increased until said congestion window exceeds a predetermined threshold, and increases thereafter by said maximum segment size for each acknowledgment received.

28. (Original) A network as set forth in Claim 27 wherein said threshold is determined by a window size that is last known to be error free in receipt of said successively transmitted packets.

29. (Original) A network as set forth in Claim 27 wherein said threshold is, upon retransmitting of any of said packets, set to the greater of $\frac{1}{2}$ of the current congestion window size or maximum segment size.

30. (Original) A network as set forth in claim 29 wherein said congestion window is reset to said maximum segment size.

31-40. (Canceled)

41. (Currently Amended) A computer readable medium containing a program which implements a procedure for real time transmission of frame-based content between a network server and a network client comprising:

~~classifying~~ designating individual packets of said content as either a frame packet that contains information for reconstructing an entire frame of said content or a differential packet that contains changes to a frame;

assigning to each of said packets a sequence number and a timer for retransmission retention, wherein the duration of the timers for frame packets is longer than for differential packets;

transmitting each of said packets to said network client;

detecting an acknowledgment for one or more packets received at said network client;

retransmitting any of said packets for which no acknowledgment is detected if their respective timers have not expired; and

terminating the retention of each packet whose timer has expired, wherein differential packets are removed more frequently than frame packets in order to ensure that critical information is not lost when an acknowledgment is not detected.

42. (Canceled)

43. (Previously Presented) A computer readable medium as set forth in Claim 41 further comprising terminating the retention of any of said packets upon detecting said acknowledgment for said any one of said packets prior to expiration of said timer.

44. (Original) A computer readable medium as set forth in Claim 41 further comprising placing said acknowledgment for differing ones of said packets into a coalesced acknowledgment.

45. (Previously Presented) A computer readable medium as set forth in Claim 41 further comprising:

maintaining the bandwidth of successively transmitted packets to the lesser of a congestion window initially determined to be maximum segment size and a client window size no greater than the size of a UDP socket input buffer at said client.

46. (Original) A computer readable medium as set forth in Claim 45 wherein said congestion window is increased by the size of each packet for which an acknowledgment is received.

47. (Original) A computer readable medium as set forth in Claim 46 wherein said congestion window is increased until said congestion window exceeds

a predetermined threshold, and increases thereafter by said maximum segment size for each acknowledgment received.

48. (Original) A computer readable medium as set forth in Claim 47 wherein said threshold is determined by a window size that is last known to be error free in receipt of said successively transmitted packets.

49. (Original) A computer readable medium as set forth in Claim 47 wherein said threshold is, upon retransmitting of any of said packets, set to the greater of $\frac{1}{2}$ of the current congestion window size or maximum segment size.

50. (Original) A computer readable medium as set forth in Claim 49 wherein said congestion window is reset to said maximum segment size.

51-60. (Canceled)

61. (Previously Presented) A computer network comprising:

- a server operative to send successive packets of frame-based content into said network;
- a network client which receives said packets from said network;
- a retransmit module responsive to said packets sent by said server to assign to each of said packets a sequence number and a timer for retention by said module and to designate said packet as one of a frame packet and a differential packet based upon whether said packet contains information for reconstructing an entire frame of said content, said network client transmitting to said retransmit module an acknowledgment for one or more packets received at said network client, said

retransmit module retransmitting selected packets in the absence of an acknowledgment for said selected packets, and

said retransmit module further removing any of said packets upon expiration of said timer assigned thereto wherein said differential packets are removed after a shorter time period than frame packets in order to ensure that critical information is not lost when an acknowledgment is not received.

62. (Canceled)

63. (Previously Presented) A network as set forth in Claim 61 wherein said retransmit module removes packets upon receipt of an acknowledgment for said packets prior to expiration of said timer.

64. (Original) A network as set forth in Claim 61 wherein said client is further adapted to place said acknowledgment for differing ones of said packets into a coalesced acknowledgment.

65. (Previously Presented) A network as set forth in Claim 61 wherein said server further maintains a bandwidth of successively transmitted packets to the lesser of a congestion window initially determined to be maximum segment size and a client window size no greater than the size of a UDP socket input buffer at said client.

66. (Original) A network as set forth in Claim 65 wherein said congestion window is increased by the size of each packet for which an acknowledgment is received.

67. (Original) A network as set forth in Claim 66 wherein said congestion window is increased until said congestion window exceeds a predetermined threshold, and increases thereafter by said maximum segment size for each acknowledgment received.

68. (Original) A network as set forth in Claim 67 wherein said threshold is determined by a window size that is last known to be error free in receipt of said successively transmitted packets.

69. (Original) A network as set forth in Claim 67 wherein said threshold is, upon retransmitting of any of said packets, set to the greater of $\frac{1}{2}$ of the current congestion window size or maximum segment size.

70. (Original) A network as set forth in Claim 69 wherein said congestion window is reset to said maximum segment size.

71-80. (Canceled)

81. (Previously Presented) A method for real time transmission of information content from a sender to a receiver over a network, comprising the following steps:

defining an initial size for a congestion window that establishes a number of successive packets of information that can be transmitted by said sender without acknowledgment from the sender;

transmitting the number of packets established by the congestion window;

upon detecting acknowledgment of a packet from the receiver, increasing the size of the congestion window by the size of the acknowledged packet; and

continuing to increase the size of the congestion window by the size of an acknowledged packet for each detected acknowledgment until an established threshold is reached.

82. (Previously Presented) The method of claim 81 including the step of further continuing to increase the size of the congestion window by a maximum segment size after said threshold is reached for each received window of acknowledgment.

83. (Previously Presented) The method of claim 82 including the step of limiting the size of the congestion window to a maximum window size established by the receiver.

84. (Previously Presented) The method of claim 81 wherein said initial size is equal to a maximum segment size for communication between the sender and the receiver.

85. (Previously Presented) The method of claim 81 wherein said threshold is equal to a window size that was last known to be error free.

86. (Previously Presented) A computer-readable medium containing a computer program that executes the following steps:

defining an initial size for a congestion window that establishes a number of successive packets of information that can be transmitted by said sender without acknowledgment from the sender;

transmitting the number of packets established by the congestion window;

upon detecting acknowledgment of a packet from the receiver, increasing the size of the congestion window by the size of the acknowledged packet; and

continuing to increase the size of the congestion window by the size of an acknowledged packet for each detected acknowledgment until an established threshold is reached.

87. (Previously Presented) The computer-readable medium of claim 86 including the step of further continuing to increase the size of the congestion window by a maximum segment size after said threshold is reached for each received window of acknowledgment.

88. (Previously Presented) The computer-readable medium of claim 87 including the step of limiting the size of the congestion window to a maximum window size established by the receiver.

89. (Previously Presented) The computer-readable medium of claim 86 wherein said initial size is equal to a maximum segment size for communication between the sender and the receiver.

90. (Previously Presented) The computer-readable medium of claim 86 wherein said threshold is equal to a window size that was last known to be error free.